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ABSTRACT

This student module on business and office safety is one of 50 modules concerned with job safety and health. This module suggests safety rules and practices that can, that would categorize the small number of employers to be health to business and office workers. Following the introduction, 16 objectives (each keyed to a page in the text) the student is expected to accomplish are listed (e.g., Name four fire hazards found in offices). Then each objective is taught in detail, sometimes accompanied by illustrations. Learning activities are included. A list of references and answers to learning Innovations Model." Although the survey response rates were

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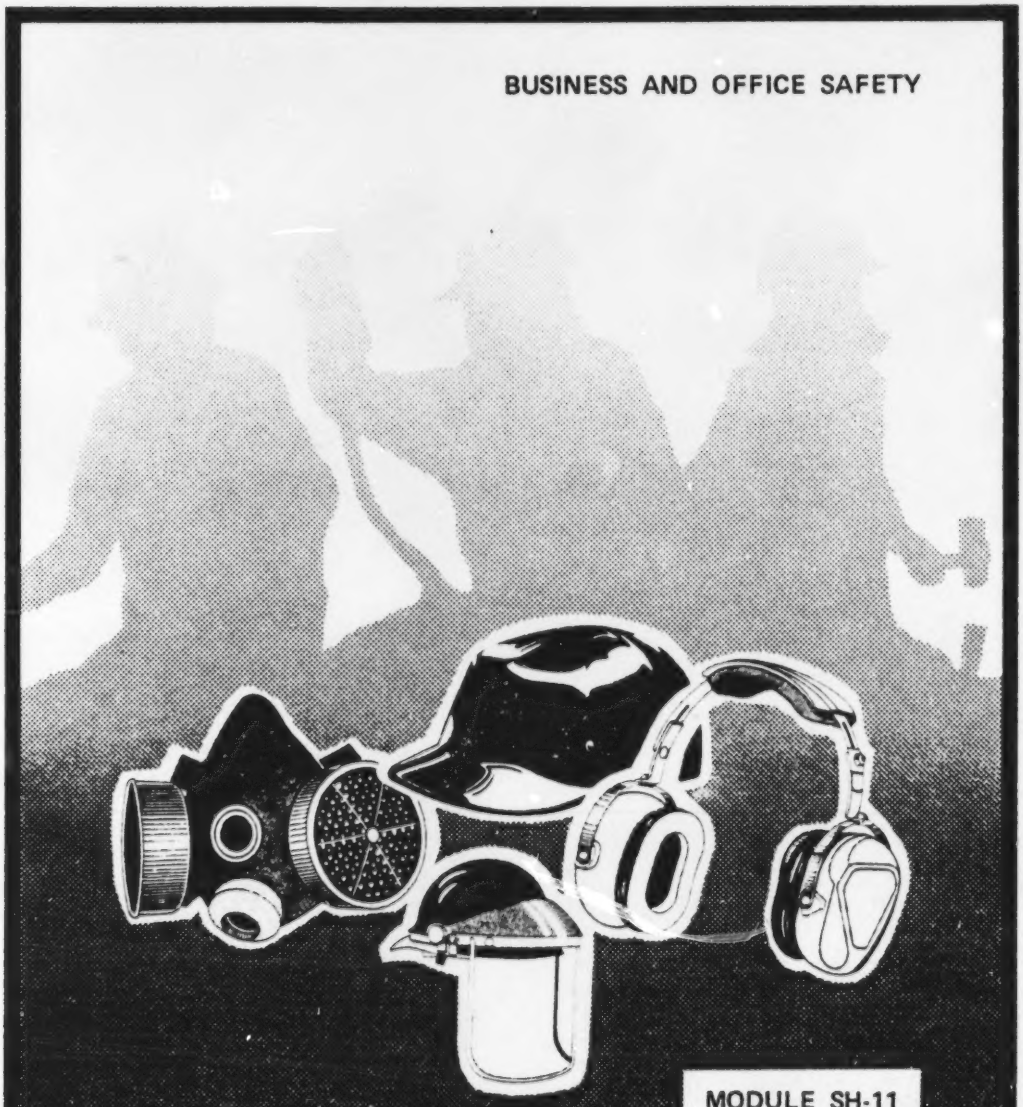
BUSINESS AND OFFICE SAFETY



MODULE SH-11

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The Center for Occupational Research and Development
601 Lake Air Drive, Suite C
Waco, Texas 76710

INTRODUCTION

The safety and health problems of office workers are not usually given a great deal of attention. Office accidents such as falls seem less dramatic than industrial accidents. The health hazards of the office, related to poor ventilation, loud noise, and the sitting-down nature of the job, are often not so easy to identify as those in a factory. Many people do not take office safety and health very seriously, and their attitude, in itself, is one of the main causes of accidents in business and office jobs.

Each year, about 40,000 people in the nation suffer a disabling accident (one that is serious enough that the person cannot work for at least a full day after the day of the injury). The direct cost of these accidents to the employers is about $100 million. Because each accident may produce pain, suffering, and long-term disability as well as money loss, the study of business and office safety practices is an important part of occupational preparation.

A sedentary (sitting-down) job may have negative effects on the human body — on muscles, joints, and nerves. Stress is often high in the business and office world, and it may have an enormous effect on health. The five senses may take a real "beating" in the office, where noise, eyestrain, lack of fresh air, and the sense of closeness caused by working in small spaces can constitute health problems.

This module contains information about the safety and health hazards of offices. It also suggests safety rules and practices that can, when followed, greatly reduce the danger of injury and poor health to business and office workers.

OBJECTIVES

Upon completion of this module, the student should be able to:

1. Discuss the cost of office and business accidents. (Page 3)
2. Identify four categories of workers most likely to be hurt on the job. (Page 3)
3. List and discuss the five main types of disabling accidents. (Page 4)

4. List five major ways to control office hazards through proper offic layout. (Page 8)
5. Define ergonomics and discuss its effect on the safety and health of office workers. (Page 9)
6. Describe the design requirements for aisles, stairs, and doors in the office area. (Page 10)
7. State two ways to cut down glare in the office. (Page 11)
8. Compare natural and controlled ventilation in the office. (Page 12)
9. List the electrical hazards that may be found in an office setting. (Page 14)
10. State the requirements for safe storage of supplies and equipment. (Page 15)
11. Identify the requirements for janitorial storage areas in office buildings. (Page 17)
12. Name four fire hazards found in offices. (Page 17)
13. State the things that should be included in emergency action plans for any workplace. (Page 19)
14. State at least four ways to prevent hazardous chemical exposure and accidents with chemicals. (Page 21)
15. State the main source of radiation present in many offices. (Page 23)
16. Describe the requirements for restrooms, first aid, and eating and drinking areas for office workers. (Page 24)

OBJECTIVE 1: Discuss the cost of office and business accidents.

Accidents are costly in a number of ways. The human "cost" includes pain and suffering, disruption of normal routine and family life, and in some cases, disability or death. The financial burden of accidents falls on individual workers and on their employers.

In 1976, there were almost 5000 disabling, on-the-job injuries sustained by clerical office workers in New York State alone. Eight deaths, six cases of permanent total disability, and over 2000 cases of permanent partial disability resulted from these injuries. The average Worker's Compensation payment for these cases was about $3,000. The actual cost of an accident includes the cost of medical treatment, lost wages, decreased office production, and higher insurance and business costs for the company. Some accidents such as fires damage the workplace itself and add to the total accident loss.

ACTIVITY 1:*

List four ways that accidents may cause financial loss to individuals and businesses.

1. _____
2. _____
3. _____
4. _____

OBJECTIVE 2: Identify four categories of workers most likely to be hurt in office accidents.

Any company's safety and health program must have the full support of each worker to reduce the number of workplace accidents. But some groups of workers are more likely to have accidents than others. These people need to be particularly careful while working which means they usually need extra

*Answers to Activities begin on page 25.

safety training. New employees must be oriented, for more workers are injured during their first month on the job than at any other period of employment: 93 out of 1000 of all workers have some type of injury during this period. The accident rate drops to 1 per 1000 for workers with five years' experience.

Even experienced workers often show a higher rate of accidents when they move into different work surroundings, because they are not used to the lay-out of the workplace. Any change in jobs or in work areas calls for the worker to take extra care; therefore, training and orientation may be needed.

Young workers, especially those who have just graduated from high school, have a higher accident rate than do workers in their 20's and 30's. These young workers are often facing a number of life changes at one time, such as new apartments or homes, new friends, dating or marriage, so they may require extra training.

About twice as many injuries in the office happen to women than to men. (This rate takes into account the greater number of women working in offices.)

ACTIVITY 2:

Which ones of the following individuals would seem most likely to suffer a work injury? (Choose 2)

__ a. A twenty-eight-year-old man who just changed jobs two weeks ago.

__ b. A forty-year-old woman who has been in the same office for six years.

__ c. A nineteen-year-old high school graduate who has been on the job for six months.

__ d. A sixty-year-old office manager who has worked for the same company for 33 years.

__ e. A thirty-year-old woman who has been in the same job for three years.

OBJECTIVE 3: List and discuss the five main types of disabling accidents.

The types of accidents that occur in offices are similar for all groups of workers. Falls are the most common disabling accidents that occur in offices. Women are injured from falls more often than men.

Falls can be due to unsafe work practices or to unsafe work conditions. Causes of falls and ways to prevent most office falls are shown in Table 1.

TABLE 1. CAUSES OF FALLS AND WAYS TO PREVENT OFFICE FALLS.

Causes	Methods of Prevention
Tripping hazards	Keep floors clear of tripping hazards. Report floor defects: loose tiles, loose boards, buckling carpet, and so on. Keep electric cords out of walkways.
Spilled food/liquids	Wipe up spills immediately. Find leaks from fountains or sinks.
Blocked vision	Carry loads that you can see over.
Unsuitable clothing	Fashions change, but keep safety in style. Long, flowing clothes, dangling jewelry, and very long hair can be risky around some machinery and equipment. Shoes that do not fit well, or that have slick soles, spike heels, or platform soles can cause falls.
Improper use of equipment	Tilted chairs are dangerous! Keep all four legs on the floor. Most office chairs have casters. Learn to seat yourself firmly in a chair so that it does not skid away, dumping you on the floor. Use a step stool or ladder for climbing. Never use chairs with casters. When you use a ladder, place it firmly. Move the ladder when you need to, in order to avoid stretching and losing balance. Climb stairs one step at a time and use the handrail.

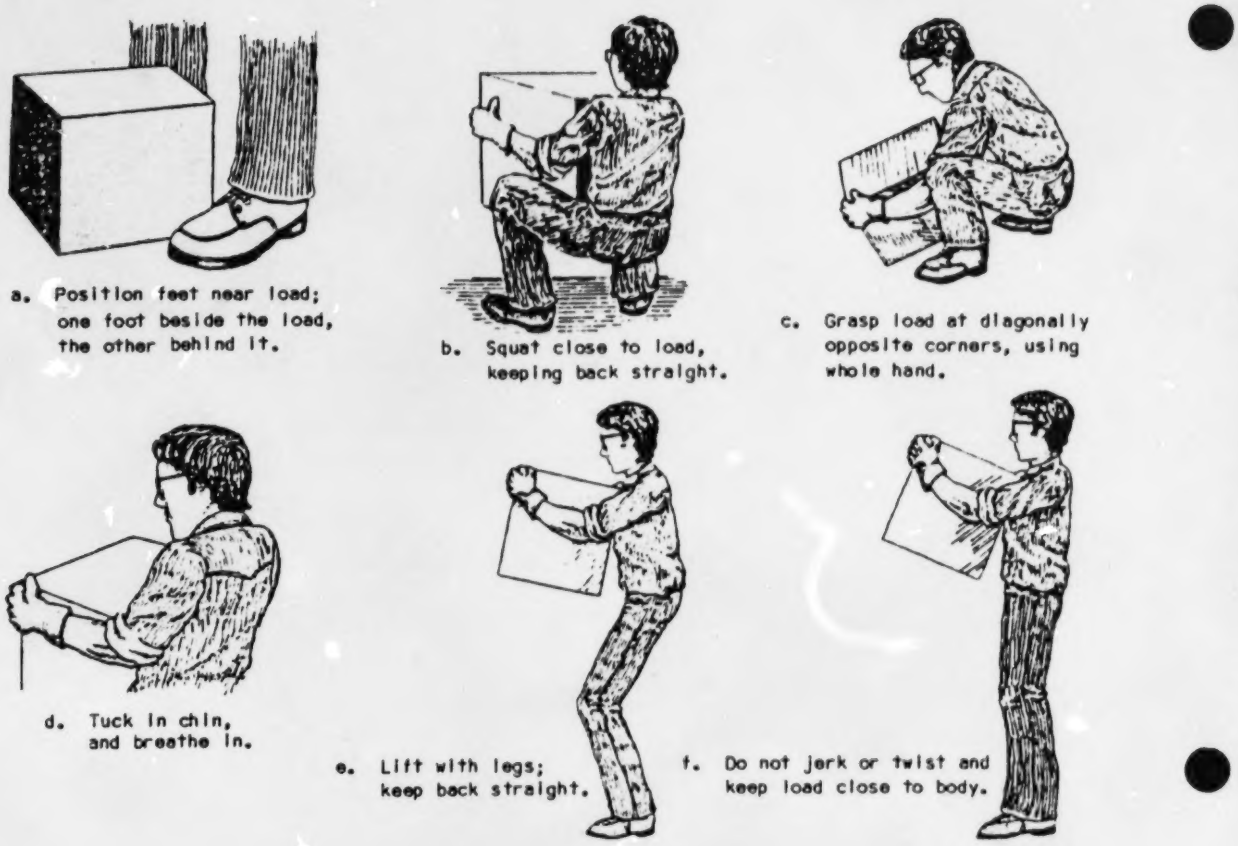
A second major cause of office injury is muscle and joint strain caused by improper lifting or sudden and awkward movement. To avoid injury when moving blocks, file boxes, and office machinery, the suggestions shown in Figure 1 should be followed.

a. Position feet near load; one foot beside the load, the other behind it.
b. Squat close to load, keeping back straight.
c. Grasp load at diagonally opposite corners, using whole hand.
d. Tuck in chin, and breathe in.
e. Lift with legs; keep back straight.
f. Do not jerk or twist and keep load close to body.

Figure 1. The proper way to lift.

Back injuries can result from lifting light as well as heavy objects. A simple lifting task such as repeatedly picking up and sorting papers can strain a part of the body if it is done the wrong way. With all lifting tasks, the most important causes of strain are being out of good physical shape and holding the body in a strained position for too long a time.

Collisions with fixed objects or with other people in the office also cause injuries. Workers should be alert when approaching corners, going past doorways or stairs, or standing in front of closed doors, as shown in Figure 2, to prevent workers from tripping over or bumping into them.

Close a file drawer immediately after using it, and open only one drawer at a time (Figure 3). Serious injuries have been caused by file cabinets

Figure 2. Be alert when standing in front of closed doors.

Figure 3. Open only one drawer at a time to avoid tipping over file cabinets.

falling forward with several drawers open. A good way to prevent the tipping of file cabinets is to bolt them to the floor or wall. It is very easy to trip over lower file drawers that have been left open.

Seemingly simple actions can cause serious injury. Sailing paper airplanes or flipping small objects (paper clips, staples, rubber bands) has been known to cause blindess when people were struck in the eye.

Injuries that result from being pinched by drawers, doors, and machinery occur often in offices. Paper cuts and staple punctures are common, too. Most of these injuries are minor, but even minor injuries can cause pain and lessen efficiency on the job. Such accidents can be avoided in these ways:

- Long hair should be tied back.
- Dangling jewelry should be removed.
- Loose clothing such as ties and scarves should be removed before operating machinery such as duplicators, addressing machines, and presses. (Removing such items will prevent the operator from becoming tangled in the machine.)

- Doors should be shut carefully to ensure that hands are not in the way.
- A workers should never lean across an open drawer or cabinet door.

ACTIVITY 3:

Describe at least one type of accident that can occur with each of the following types of equipment or clothing.

1. File cabients _____
2. Spike heels _____
3. Electric cords _____
4. Chairs _____
5. Doors _____
6. Stairs _____
7. Rubber bands _____
8. Addressing machines _____

OBJECTIVE 4: List five major ways to control office hazards through proper office layout.

The properly arranged, safe office allows enough clear space for people traffic. All office furniture and machines should be placed out of walkways and as close as possible to the most frequent users. Aisles should be free of things such as trash cans, pencil sharpeners sticking out from the wall, and electric or telephone cords.

Similar activities, such as all copying processes, should be grouped together in one area. File cabinets can be bolted to the floor or to other file cabinets so that they cannot tip over onto the user. Cabinets should be placed so that the open drawers do not extend into a walkway.

ACTIVITY 4:

Mark each of these statements true or false.

_____ 1. Trasn cans should be placed in the aisle for ease in emptying them.

_____ 2. File cabinets are best left free-standing.

_____ 3. Telephone and electric cords are hazards when they are located in walkways.

_____ 4. It is not desirable to group several similar activities in one area.

OBJECTIVE 5: Define ergonomics and discuss its effect on the safety and health of workers.

Ergonomics is the science of designing workplaces where workers can be as comfortable and as efficient as possible while they do their jobs. To do this, engineers have to gather information about how the human body and mind work, and use this to design the best job situation. Ergonomics experts are even concerned with the air one breathes on the job — its temperature, humidity, and cleanliness. The effects of noise, vibration, and speed are studied, as well as the way people work with machines. Three items describe the purpose of ergonomics:

- Designing something (like a piece of equipment or a chair) specifically for the people who will use it.
- Simplifying a system so that as few human errors as possible will be made.
- Designing the system to fit the needs and limits of human beings instead of trying to fit people into a system that is already built.

Business people who sit during most of their workday often suffer back and muscle strain and fatigue. Back pain is the second leading cause of time off the job. (The first is colds and respiratory illness.) Strain comes from not having the right support for the body and from bad posture. Chairs are one of the most important things used in the office. Well designed chairs contribute to the worker's good physical health and ability to produce good work.

Besides seating, there are other ergonomic factors in the office. In repetitive tasks such as duplicating or collating, the work area should be designed for the greatest possible freedom of posture. Work that has to be done from a standing position should be able to be accomplished without having to stand on toes, twist, or bend the trunk sideways. Work should not be done at the edges of tables; working within three inches of the edge of the table puts too much strain on the upper arm to keep the hands in position.

In summary, the interaction of the worker, the job, and the equipment on the job must be considered. The result of poorly designed work areas can be low job performance and poor health for the worker.

ACTIVITY 5:

Complete these statements:

1. Ergonomics is concerned with _____

   _____

2. A properly designed office chair provides _____

   _____

3. Two possible results of using poorly designed furniture and equipment are _____ and _____.

OBJECTIVE 6: Describe the design requirements for aisles, stairs, and doors in the office area.

Aisles, stairs, and doors that meet safety standards can help eliminate accidents. Aisles must be at least four feet wide to allow people and equipment to move about in a safe and orderly manner. To prevent slipping and tripping accidents, either hard-surfaced flooring with a non-skid finish or a well-laid carpet that has no worn areas or curled edges that could cause people to trip should be used. Broken tiles or frayed carpet edges in aisles can create tripping hazards and should be reported to a supervisor or to the maintenance department.

Stairs must meet certain safety requirements such has having standard handrails on one side of stairs that are up to 44 inches wide, and on two

sides of stairs that are wider than 44 inches. For stairs wider than 88 inches, a center handrail must be added. Stair treads should have an even surface and must be deep enough so that feet can be squarely placed on them. Stairs must never be cluttered nor used for storage.

Doors cause many accidents. Office doors should open flat against a wall and should be open all the way and secured, or completely closed. A bruised eye that results from colliding with a partly open door is no joke!

Special care is needed when glass doors are used. Such doors need clear markings on the glass, such as painted designs or decals placed 4 1/2 feet above the floor and in the middle of the door, so that people will not walk into the door. Solid doors present hazards when people are coming from different directions at the same time. A window in a door can prevent collisions as long as people are watching where they are going. Exit doors must be clearly marked and well lit. Each worker should know where the exits are, and fire exits should not be locked.

ACTIVITY 6:

State two things that make —

Stairs safe: 1. _____
2. _____

Aisles safe: 1. _____
2. _____

Doors safe: 1. _____
2. _____

OBJECTIVE 7: State two ways to cut down glare in the office.

Many things in the workplace affect the way people work. One of these is lighting. Good lighting has little glare and is suited to the main jobs done in a particular area. Poor lighting can cause eye strain.

Workers should not sit facing a window, an unshaded lamp, or other sources of glare. Glare occurs when light strikes a smooth surface that reflects the light and "bounces" it back toward the eye. To control glare,

light sources must be placed at a proper height above the work area for the job at hand. These light sources should have some type of diffuser (a way to spread out the light). A "waffle" covering, milky glass, or plastic covering are examples of often-used diffusers. Indirect, shielded fluorescent lamps give a high level of light without glare.

Glare may also be caused by highly polished surfaces in the office, such as hard plastic, polished wood, and reflective chrome. If these surfaces create a disturbing glare, they should be moved or covered.

ACTIVITY 7:

Name two ways to reduce glare in the office.

1. _____

2. _____

OBJECTIVE 8: Compare natural and controlled ventilation in the office.

Proper ventilation in an office contributes to the health and comfort of workers and, therefore, helps them to do their jobs better. Ventilation designed for an office setting has two main functions: (1) to remove fumes and to supply fresh air for breathing, and (2) to keep a comfortable working temperature.

The three biggest problems in keeping the air in an office comfortable and fresh are cigarette smoke, temperature extremes, and smells. Cigarette smoke can make a nonsmoker feel uncomfortable and ill (see Figure 4) making eyes burn and breathing passages sore. Breathing cigarette smoke may cause worse effects in the nonsmoker than in the smoker. One serious result of inadequate ventilation is the presence of ozone, a very irritating gas formed by mixing cigarette smoke and sunlight. Ozone exposures makes breathing passages sore. If fresh air is brought in through the ventilation system often enough, the ozone problem is lessened.

Most people in an office have a different idea about what temperature is most pleasant, and some will perspire while others shiver. Temperature extremes can cause stress and people will not do their job as well as if they

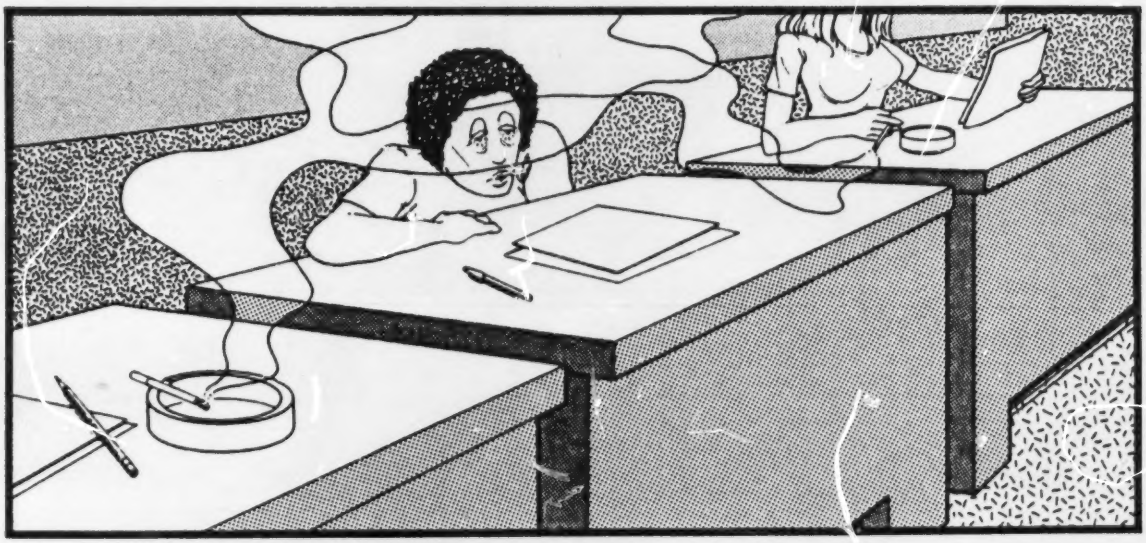


Figure 4. Cigarette smoke can make a nonsmoker feel uncomfortable and ill.

were comfortable. If the ventilation system is well designed, warm or cool air will be spread evenly. But if workers block vents or open windows, the system will not work properly.

Smells create stress, too. The mixture of food, perfume, and personal odors can be very annoying, so a good ventilation system into which fresh air is regularly pumped is very important.

In moderate climates, natural ventilation is an alternative. Natural ventilation costs little and if windows are properly placed, the resulting cross breezes can be very pleasant. The disadvantages of natural ventilation — dust and dirt blown into the office, papers blown off desks, sudden temperature changes — are so unpleasant that very few new buildings are made with only natural ventilation. Controlled ventilation relies on an HVAC system (heating, ventilation, air conditioning) to give enough air to remove fumes that gather around copying and storage areas without causing uncomfortable drafts. This type of system costs more to install and operate, but it offers clean surroundings and even, controlled temperatures.

Besides general ventilation systems, local ventilation can be used to remove harmful gases at their source. An example is the removal of ammonia gas from blueprint machines.

ACTIVITY 8:

Name two methods of office ventilation and give one advantage and one disadvantage.

1. _____

_____

2. _____

_____

OBJECTIVE 9: List the electrical hazards that may be found in an office setting.

Electric shock, burns, or damage to equipment often result from careless use of electricity in the office. Placing electric and telephone cords safely in the office can prevent many of these injuries. It is very important to keep cords out of walkways, doors, and stairs, where they could cause people to trip.

Other unsafe practices to be avoided where electrical service is involved are listed here:

- Frayed cords and broken plugs should be reported to supervisors and be tagged, preferably in red, to prevent other workers from using the equipment.
- When removing an electric plug from the receptacle, hold the plug itself firmly. Never pull on the cord when disconnecting a plug.
- Electrical equipment must never be operated with wet hands or while standing on a wet surface.
- Any electrical device must be unplugged before a service or adjustment procedure is begun.
- Avoid exposing cords to heat, abuse, or chemicals. Inspect and report any damage.
- Report broken switches, loose connections, missing or loose cover plates, or bare wires.
- Outlets and extension cords should NOT be overloaded. Before plugging in heavy equipment, check to see if the circuit can take the current needed.
- If electric motors or equipment produces sparks, gives shocks, or overheats, disconnect immediately and report the problem to a supervisor.

- Keep electrical equipment properly grounded. Three-prong plugs provide grounding and protect from shock.
- Use only durable, heavy-duty extension cords.

The typical voltage found in most electrical systems is 110 volts, and this amount of voltage can produce enough current to kill a person who makes contact with it.

Besides the danger of shock, electricity can cause fires. If you stop and think about all the electrical equipment used in most offices today, you will realize how much current is flowing! All the safe practices listed above should be followed to prevent fire and electrical shock.

ACTIVITY 9:

Write safe or unsafe for each of these practices:

_____ 1. Putting a red tag on a frayed e ectric cord.

_____ 2. Cutting off a "third prong" from a plug so that it will fit into an outlet.

_____ 3. Using double sockets to allow several machines to be plugged into the same outlet.

_____ 4. Holding the plug instead of the cord when disconnecting a machine.

_____ 5. Operating the duplicator (copy machine) while standing where mop water has just been spilled.

_____ 6. Reporting unsafe equipment promptly to supervisor.

OBJECTIVE 10: State the requirements for safe storage of office supplies and equipment.

"Orderly and clean" are the two words that best describe safe storage of office supplies and equipment. Clutter makes falls, collisions, and fires more likely to occur.

Sharp or pointed objects (knives, spike files, tacks, and letter openers) and flammable liquids (cleaners, inks, and solvents) need to be stored with special care. To prevent wounds, sharp items must be stored where the points

or edges will not be touched by accident in the course of ordinary activities. Special drawers and boxes are suitable storage places for these instruments.

Flammable liquids (those that will burn easily and quickly) should be clearly labeled and stored in approved safety containers. Oily rags and paper toweling should be placed in special waste containers. All these substances must be kept away from heat sources and open flames. Smoking is NEVER allowed in a storage room. Wher using flammable liquids, read the labels and follow the warnings.

ACTIVITY 10:

Complete these sentences:

Flammable liquids are those that _____ easily. They must be stored in _____ containers and kept _____ _____ heat and flames. Only _____ quantities should be kept on hand. All containers should be clearly _____. Smoking must _____ be permitted in storage areas.

OBJECTIVE 11: Identify the requirements for janitorial storage areas in office buildings.

The janitorial storage area of an office has specific requirements. It should be arranged with materials stacked carefully to prevent their falling onto workers. The heaviest and largest items should be on the bottom of the pile. Where materials are stored on shelves, the heavy objects should be on the lower shelves. Trash and litter that could create fire hazard should not be stored in these areas, but should be disposed of promptly. Also, to prevent a fire hazard, packing materials must be stored in covered metal cans or metal-lined bins with self-closing covers. Oily rags must also be stored in metal containers, preferably in locked cabinets, to avoid the possibility of fire resulting from spontaneous combustion (when chemicals in the rags catch on fire even without a match or spark present).

ACTIVITY 11:

Describe a suitable container for flammable materials in janitorial service areas.

_____

_____

OBJECTIVE 12: Name four fire hazards found in offices.

Cleaning agents and cloths, duplicating fluids and solvents, as well as paper goods and electrical appliances must all be included in a consideration of the fire hazards found in offices. Cleaning agents, cloths used for cleaning and polishing, and duplicating fluids are the most common fire hazards in most business offices. These items must be stored in metal containers. Smoking should never be allowed within 10 feet of where flammable solvents are used or stored.

Paper goods, because they are combustible, must be kept from open flames and from sources of high temperature (electric heaters or any gas-fired device). Combustibles must be protected from careless smokers. It is very important that workers who smoke never toss lighted matches into trash cans, leave burning cigarettes on desks and file cabinet edges, or empty ash trays into paper-filled containers while the tray's contents are still smoldering. "No Smoking" signs must be strictly obeyed, and common sense and good manners must be the guide for all office smokers.

Appliances such as coffeepots and hot plates are sometimes brought to the office when they are replaced by a newer model for the home. Since these appliances are sometimes old, care should be taken to see that they are not a fire hazard.

Offices should have a fire prevention and protection plan that includes a list of workplace hazards and the proper handling and storage procedures for these hazards; a list of possible fire starters and ways to control them; and the type of fire protection equipment or systems that have been chosen to control the fire.

The employer should name those employees who are assuming responsibility for maintenance of fire prevention equipment, and others who are in charge of

controlling fuel sources that could cause a fire. Everyone in the office needs to know who these employees are, so that potential (possible) fire hazards can be reported to them.

Employers may choose to have all employees evacuate the building immediately; they may also choose to have a small group of trained people to fight the fire while the rest of the employees evacuate; or employers may choose to train all workers in fire protection and firefighting. Whatever plan is chosen, the emergency evacuation plan and the fire protection plan must be in writing.

ACTIVITY 12:

Name four fire hazards found in offices.

1. _____
2. _____
3. _____
4. _____

OBJECTIVE 13: State the things that should be included in emergency action plans for any workplace.

News stories about fires in public buildings should serve to remind all workers that tragic fires do occur. Because the possibility of fire is very real and present at all times, it is essential that every office have an emergency plan and that each employee be familiar with the procedure to follow if a fire occurs.

Every emergency evacuation plan should include the following:

- Planned escape routes and actions.
- A way to account for all employees once evacuation has taken place.
- Assigned rescue and medical duties if there are employees trained for and assigned to those duties.
- The way the fire is to be reported.
- The names of those employees who can give others information about the plan, and who have key responsibilities in the plan. Depending on the kind of plan used, some employees may be assigned actual firefighting duties. In some plants or offices, there may be things

of an emergency nature that have to be done, such as disconnecting utilities. These duties should be assigned, too.

If extinguishers or hoses and other firefighting equipment are part of the emergency plan, this equipment needs to be suitable for extinguishing the type of fire that might occur in that building. Table 2 explains the types of extinguishers and their uses.

TABLE 2. TYPES OF EXTINGUISHERS AND THEIR USES.

1. Extinguishers suitable for Class A fires should be identified by a triangle containing the letter "A." If colored, the triangle should be colored green. These extinguishers contain water and are used for fighting fires where paper, wood, or cloth are feeding the flames.

3. Extinguishers suitable for Class C fires should be identified by a circle containing the letter "C." If colored, the circle should be blue. These extinguishers contain a dry chemical and are used to fight electrical fires.

2. Extinguishers suitable for Class B fires should be identified by a square containing the letter "B." If colored, the square could be colored red. These extinguishers usually contain a dry chemical or carbon dioxide and are used for fighting fires where flammable liquids are feeding the flames.

4. Extinguishers suitable for fires involving metals should be identified by a five-pointed star containing the letter "D." If colored, the star should be colored yellow. These extinguishers contain agents that can fight fires fed by combustible metals.

Fire extinguishers must be visually inspected monthly and inspected by a qualified technician at least yearly. Evidence of such inspection will be attached to each extinguisher and will bear the date and identifying number of the person or agency doing the inspection.

In recent years, triple-Class A, B, and C extinguishers have become available. These extinguishers are probably the most useful for office buildings. The number of extinguishers and the placement of them in the office depends on what kind of emergency evacuation plan is going to be used. If employees are not supposed to have any part in firefighting, these extinguishers may not be required. More information about requirements for firefighting equipment can be found in SH-05, "Fire Prevention and Emergency Procedures."

Evacuation should begin as soon as the fire is reported. Employees should be alerted by an alarm system.

Before going out through any fire exit, feel the door. If it is warm, do not open it. Go to another exit. In a high-rise building, evacuation should take place at least two floors above the burning level or at least one floor below. All buildings over 75 feet high must be protected by an automatic sprinkler system. When there is smoke, stay low on the floor. The major cause of death in a fire is smoke inhalation and smoke can overcome a person in a matter of seconds. If you are trapped in a room, open the window, and try to get the attention of a passerby. People do not usually survive jumps of more than two stories, so jumping is often NOT the best way out.

Every worker needs to know how to get out of the building, and what to do in case of a fire. These procedures should be reviewed with all employers at least once a year.

ACTIVITY 13:

Mark each of these statements true or false.

_____ 1. All office workers must be trained for firefighting.

_____ 2. The employer's emergency action plan should be in writing.

_____ 3. Extinguishers marked A, B, C would be appropriate for an office building.

_____ 4. The major cause of death in a fire is smoke inhalation.

OBJECTIVE 14: State at least four ways to prevent hazardous chemical exposure and accidents with chemicals.

Chemicals are used in almost every office. They are part of materials and supplies that are so common that most people do not even think about them. Chemicals used in copy machines, glues, inks, cleaners for machinery, and cleaning supplies from the janitor's closet may all present hazards.

We speak of some chemicals as being toxic; this means that the chemical can be harmful to some part of the body when it is present in great enough

amounts (concentrations). Chemicals can enter the body in different ways; they can be breathed, or they can touch the skin and be absorbed through the skin. Chemicals may also enter through the mouth, although swallowing chemicals at work is fairly rare. Once a contaminant (unwanted substance) is taken into the body, it may affect the body in a number of ways. Some air contaminants, like the ammonia used in cleaning fluids, irritate the nasal passages and mucous membranes (see Figure 5). Carbon monoxide given off during cigarette smoking reacts with the blood's hemoglobin (a protein in the red blood cells), and blocks the carrying of oxygen to the blood. Other chemicals, when breathed in, may affect only certain organs such as the kidneys or liver. Some chemicals irritate the skin itself; some are absorbed through the skin and enter the bloodstream.

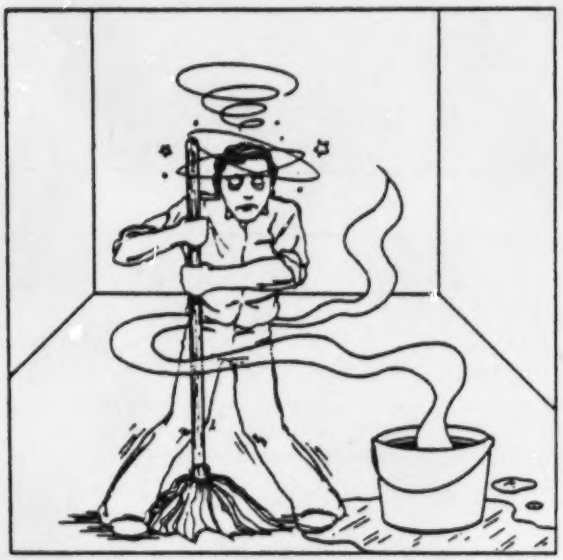


Figure 5. Cleaning fluids such as ammonia irritate the nasal passages and mucous membranes.

The degree of hazard to a worker from these chemicals depends on four things:

- The chemical or contaminant itself.
- The level of exposure.
- The length of exposure.
- Individual differences in the way the body reacts to the chemical.

The easiest way to find out about chemicals is to read the label. This will explain (1) the dangers of using the chemical, (2) how to use and store it safely, and (3) what action to take if an accident happens. For more information, ask the maker of the chemical for a Material Safety Data Sheet.

Several actions can help to prevent chemical accidents: spills and leaks should be cleaned up immediately, and ventilation systems should move fresh air around so that toxic vapors will not build up. Chemicals should be stored according to the directions on the label and old chemicals should not be kept around. When storing chemicals the following rules should be observed:

- Close all containers when the contents are not being used.
- Keep all flammable and reactive chemicals in a safe separate storage area.
- Keep corrosive materials labeled and away from other materials that might react with them.
- Follow the label directions when throwing away chemicals. Just putting them in the office dumpster could be dangerous.
- Report all instances of chemical irritation to supervisors.

ACTIVITY 14:

Mark each of these statements true or false.

_____ 1. Chemicals can enter the body in many indirect ways.

_____ 2. Cigarette smoke can harm a nonsmoker who breathes it.

_____ 3. Fresh air entering ventilation systems will help keep toxic vapors at a safe level.

_____ 4. It is not necessary to read the labels on chemical cleaners, inks, and so on.

_____ 5. Old chemicals should be thrown away in the local dumpster.

OBJECITVE 15: State the main source of radiation present in may offices.

There are two kinds of radiation: ionizing radiation and nonionizing radiation. Nonionizing radiation is given off by high-powered electrical equipment used in some businesses and industries. In the office, sources of nonionizing radiation include microwave ovens, lasers, and copier lights.

Microwave ovens should present no danger as long as the seal between the door and the oven is secure and tight. The seals should be cleaned carefully and often, to prevent spilled foods from causing gaps in the seal. People with heart pacemakers should stay away from microwave ovens.

Some high-speed copiers in the office use laser light. The danger of this kind of laser is that it can burn the eye. Follow the maker's directions carefully when using this type of copier. Do not look at the light. This precaution is true for all copier lights; even nonlaser copier lights are very intense and will affect vision for a few moments.

Another source of radiation in the office is video display screens. Cathode ray tubes (CRTs) are the readout monitors or display screens on computers or word processors. This kind of equipment is used in many offices today. Current knowledge about CRTs suggest that there is no danger in using these devices.

ACTIVITY 15:

Name three sources of radiation likely to be found in offices.

1. _____
2. _____
3. _____

OBJECTIVE 16: Describe the requirements for restrooms, first aid, and eating and drinking area for office workers.

All offices are required to provide running water for the use of employees. Hand soap and towels or an air-dryer must be in every restroom. Flooring must be of a type that is easily cleaned and that dries quickly. Either natural or mechanical ventilation must be provided to vent fumes. Food or beverages should not be stored or eaten in toilet rooms.

If there is no infirmary or clinic near the workplace, some person trained to give first aid (and this usually includes Cardio-Plumonary Resuscitation [CPR]) must be available. First aid supplies should be stored in a

convenient place. Workers should be told where the supplies are and how to locate the trained person. The employer must make sure that medical personnel are easily available to advise and consult on matters of health in the workplace.

Safe, clean drinking water must be provided in the workplace.

Where food is allowed to be eaten on the premises, regulations state that an area must be provided that is adequately lighted, away from toxic substances, well ventilated, and equipped with easily cleanable garbage cans. Flooring in the eating area must be cleaned well and often. If there are food services, these must follow the rules of good hygiene. Food served must be wholesome, free from spoilage, and protected from contamination.

ACTIVITY 16:

List two regulations for an area where food is eaten;

1. _____
2. _____

and two ways in which first aid should be provided:

1. _____
2. _____

REFERENCES

CORD. Fire Prevention and Emergency Procedures (SH-05). Waco, TX: 1981.

National Safety Council. Accident Facts. Chicago: National Safety Council, 1979.

U.S. Department of Labor. General Industry. Revised Nov. 7, 1978. OSHA Safety and Health Standards (19 CFR 1910).

ANSWERS TO ACTIVITIES

ACTIVITY 1

1. Medical costs.
2. Lost wages.
3. Decreased production.
4. Higher insurance and business costs.

ACTIVITY 2

a and c

ACTIVITY 3

1. Tipping over on top of someone.
2. Tripping and falling.
3. Tripping and falling.
4. Tipping and causing a fall, sliding out from under person.
5. Collision with closed or partly open door; person being hit when someone opens door from the other side.
6. Tripping; falling.
7. Hitting eyes and blinding person.
8. Long hair or loose clothing can catch in them and draw the operator into the machinery.

ACTIVITY 4

1. False.
2. False.
3. True.
4. False.

ACTIVITY 5

1. Designing workplaces where workers can be as comfortable and as efficient as possible while they do their jobs.
2. Good support for the body.
3. Poor health and less ability or inability to do good work.

ACTIVITY 6

1. Safe stairs – (any two) provided with handrails, tread of sufficient size, even surface.
2. Safe aisles – (any two) nonslip surface, no tripping hazards, minimum width four feet.

3. Safe doors — (any two) swing flat against wall, kept open either all the way or closed completely; if glass, have safety design 4 1/2 feet from floor and centered on the door; if solid, have viewing window, exit doors clearly marked, well lit, fire doors unlocked.

ACTIVITY 7

Any two of the following:

1. Place light sources at proper height above work area.
2. Equip light sources with some type of diffuser.
3. Use shielded fluorescent lights.

ACTIVITY 8

1. Natural ventilation: Advantage — low cost.

   Disadvantage — (one of the following) dusty, papers blow off desks, uncontrollable temperatures.

2. Controlled ventilation: Advantage — offers clean surroundings and uniform, controllable temperatures.

   Disadvantage — expensive to install and operate.

ACTIVITY 9

1. Safe.
2. Unsafe.
3. Unsafe.
4. Safe.
5. Unsafe.
6. Safe.

ACTIVITY 10

1. Burn.
2. Metal.
3. Away from.
4. Small.
5. Marked.
6. Not or never.

ACTIVITY 11

A metal container or metal-lined bin with a self-closing cover.

ACTIVITY 12

1. Cleaning chemicals.
2. Duplicator fluids.
3. Paper.
4. Careless smokers.

ACTIVITY 13

1. False.
2. True.
3. True.
4. True.

ACTIVITY 14

1. True.
2. True.
3. True.
4. False.
5. False.

ACTIVITY 15

Any three of the following:

1. Lasers.
2. CRTs.
3. Microwave ovens.
4. Readout monitors.
5. Word processors.
6. Copy machines or copiers.

ACTIVITY 16

Any two of those listed:

Adequate lighting; good ventilation, have easily cleanable garbage cans; floors must be cleaned well and often; food must be served to follow the rules of good hygiene; food must be wholesome, free from spoilage and protected from contamination.

and:

Medical personnel should be readily available; first aid supplies should be stored in convenient place.